

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A manipulandum device adapted to allow interaction between a user and a computer, the device, comprising:
 - a housing;
 - a sensor configured to detect a movement of at least a portion of the housing, the sensor configured to output sensor signals associated with the movement; and
 - an electroactive polymer actuator coupled to the housing and configured to output a haptic-feedback force associated with the output sensor signals.
2. (Previously Presented) The device of claim 1, wherein the haptic-feedback force is associated with an event implemented by a host computer.
3. (Previously Presented) The device of claim 1, wherein the haptic-feedback force output by the electroactive polymer actuator is an inertial force caused by moving a mass.
4. (Withdrawn) The device of claim 1, further comprising a button, the haptic-feedback force being output through the button.
5. (Withdrawn) The device of claim 4, wherein the button is configured to respond to the haptic-feedback force in a degree of freedom of motion of the button.

6. (Withdrawn) The device of claim 4, wherein the button is configured to respond to the haptic-feedback force with a lateral movement, approximately perpendicular to a degree of freedom of motion of the button.
7. (Withdrawn) The device of claim 1, wherein the haptic-feedback force output by the electroactive polymer actuator is a rotary force.
8. (Withdrawn) The device of claim 1, wherein the haptic-feedback force output by the electroactive polymer actuator is a linear force.
9. (Previously Presented) The device of claim 1, wherein the electroactive polymer actuator is configured to move portions of the housing.
10. (Withdrawn) The device of claim 1, wherein the electroactive polymer actuator is configured to modify the frictional resistance of a moving part.
- 11 (Withdrawn) The device of claim 1, wherein the electroactive polymer actuator is configured to output the haptic-feedback force to a rotating wheel coupled to the housing.
12. (Withdrawn) The device of claim 8, wherein the electroactive polymer actuator is configured to move a portion of a member from inside of the housing to outside of the housing.

13. (Withdrawn) The device of claim 12, wherein the electroactive polymer actuator is one of a plurality of electroactive polymer actuators, the plurality of electroactive polymer actuators being arranged in a tactile array.

14. (Withdrawn) The device of claim 1, wherein the housing is configured as a stylus.

15. (Withdrawn) The device of claim 1, wherein the housing is configured as a trackpoint joystick controller.

16. (Currently Amended) A manipulandum device adapted to allow interaction between a user and a computer, the device, comprising:

a sensor configured to detect a movement of at least a portion of the device apparatus, the sensor configured to output sensor signals associated with the movement; and

an electroactive polymer actuator coupled to the device apparatus and configured to output a haptic-feedback force associated with the output sensor signals, the electroactive polymer actuator being controlled by associated input signals.

17. (Previously Presented) The device of claim 16, wherein the haptic-feedback force output by the electroactive polymer actuator is an inertial force caused by moving a mass.

18. (Withdrawn) The device of claim 16, further comprising a button, the haptic-feedback force being output through the button.

19. (Withdrawn) The device of claim 16, wherein the haptic-feedback force output by the electroactive polymer actuator is a rotary force.
20. (Withdrawn) The device of claim 16, wherein the haptic-feedback force output by the electroactive polymer actuator is a linear force.
21. (Withdrawn) The device of claim 16, wherein the electroactive polymer actuator includes at least two layers of electroactive polymer material, the electroactive polymer actuator being configured to bend based on a characteristic of each layer of electroactive polymer material.
22. (Withdrawn) The device of claim 16, wherein the electroactive polymer actuator includes a dielectric surrounded by two electrodes, the dielectric being configured to expand in area when activated by the input signals.
23. (Previously Presented) The device of claim 16, wherein the electroactive polymer actuator is configured to move portions of the apparatus.
24. (Withdrawn) The device of claim 16, wherein the electroactive polymer actuator is configured to modify the frictional resistance of a moving part.
25. (Withdrawn) The device of claim 16, wherein the electroactive polymer actuator is configured to move a portion of a member from inside of the apparatus to outside of the apparatus.

26. (Previously Presented) A manipulandum device adapted to allow interaction between a user and a computer, the device, comprising:

a housing; and

an electroactive polymer (EAP) element coupled to the housing and configured to output a haptic-feedback force associated with output sensor signals, the EAP element being controlled by associated input signals, the haptic-feedback force being generated by deformation of the EAP element.

27. (Withdrawn) The device of claim 26, wherein the EAP element is configured to detect a contact of the housing.

28. (Withdrawn) The device of claim 26, wherein the EAP element is configured to detect the magnitude of an applied pressure on the EAP element.

29. (Withdrawn) The device of claim 26, wherein the haptic-feedback force output by the EAP element is a linear force.

30. (Withdrawn) The device of claim 26, wherein the housing is configured as a joystick or a trackpoint controller.

31. (Previously Presented) A method of providing haptic feedback to a user interacting with a computer using a manipulandum device, comprising:

detecting movement of a housing of a manipulandum and outputting sensor signals associated with the detected movement; and

outputting a haptic-feedback force, the haptic-feedback force being generated by a deformation of an electroactive polymer actuator, the haptic-feedback force being based on input signals to the electroactive polymer actuator.

32. (Withdrawn) The method of claim 31, wherein the electroactive polymer actuator is configured to output a rotary force.

33. (Withdrawn) The method of claim 31, wherein the electroactive polymer actuator is configured to output a linear force.

34. (Withdrawn) The method of claim 31, wherein the electroactive polymer actuator is configured to modify the frictional resistance of a moving part.

35. (Previously Presented) The method of claim 31, wherein the electroactive polymer actuator is configured to move portions of the housing.

Claims 36-44 (Cancelled)

45. (Currently Amended) A manipulandum ~~device~~ apparatus adapted to allow interaction between a user and a computer, the device, comprising:

means for detecting movement of a housing and outputting sensor signals associated with the detected movement; and

means for outputting a haptic-feedback force, the haptic-feedback force being generated by a deformation of an electroactive polymer actuator means, the haptic-feedback force being based on input signals to the electroactive polymer actuator means.

46. (Withdrawn) The apparatus of claim 45, wherein the electroactive polymer actuator means is configured to output a rotary force.

47. (Withdrawn) The apparatus of claim 45, wherein the electroactive polymer actuator means is configured to output a linear force.

48. (Withdrawn) The apparatus of claim 45, wherein the electroactive polymer actuator means is configured to modify the frictional resistance of a moving part.

49. (Currently Amended) The ~~method~~ apparatus of claim 45, wherein the electroactive polymer actuator means is configured to move portions of the housing.